1 537 526

PATENT SPECIFICATION

(11) 1 537 5

(21) Application No. 9673/76 (22) Filed 11 March 1977
(23) Complete Specification filed 7 March 1977
(44) Complete Specification published 29 Dec. 1978
(51) INT CL² A46B 7/04//11/04
(52) Index at acceptance
A4K 2A2 2A3 2A5 2A6D

(19)

(54) IMPROVEMENTS IN OR RELATING TO TOOTHBRUSHES

(71) I, LOUIS WILLIAM SANDERSON, a British Subject, of The Old Vicarage, Tuxford, Newark, Nottinghamshire, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to toothbrushes.

Toothbrushes commonly have a block of bristles on one side of a bristle head, the block consisting of several parallel rows of bristle tufts. Toothbrushes having replaceable bristle heads are known, and an object of the present invention is to provide an improved toothbrush with a conveniently replaceable bristle head.

According to the present invention there

portion of the shaft transversely into the channel-section head.

The shaft may in one embodiment of the invention have a hollow handle portion, open at its end opposite the head-receiving end portion, adapted to receive a toothpaste container. For the purpose of retaining the toothpaste container, the handle portion may be curved along its length so that a toothpaste container can be wedge within the hollow interior of the handle portion. Alternatively the hollow handle portion may be straight and adapted to contain a curved toothpaste container with can be wedged within the hollow interior of the handle portion.

The invention is also applicable to toothbrushes of the type having a hollow body portion for containing cleansing fluid such as that described in my U.K. Patent Specification No. 1,244,915.

ERRATUM

SPECIFICATION No. 1,537,526

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THE PATENT OFFICE
5th March, 1979

when it becomes worn, thus avoiding the expense of replacing the entire toothbrush. This gives rise to the possibility of providing toothbrushes having expensive shafts of a durable nature made from, for example, metal or carved wood.

The interengageable elements of the bristle head and the toothbrush shaft are preferably offset with respect to the longitudinal axis of symmetry of the head and the shaft, so that the head can be fitted to the shaft only in one orientation.

The bristle head may be snap engageable with the shaft by relative longitudinal sliding movement or by pressing the end

toothbrush according embodiment of the invention, illustrating two methods of removal of the bristle head from the brush shaft;

Figure 6 is a longitudinal sectional view of part of a toothbrush according to a second embodiment of the invention; and

Figure 7 is a cross-sectional view, taken on line VII—VII of Figure 6.

In the drawings similar features of the embodiments are referenced by the same numerals.

Referring to the drawings Figures 1 to 3 show an end portion, generally indicated 1, of a shaft 2 of a toothbrush. The shaft 2 is

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(54) IMPROVEMENTS IN OR RELATING TO TOOTHBRUSHES

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The present invention relates to toothbrushes.

Toothbrushes commonly have a block of bristles on one side of a bristle head, the block consisting of several parallel rows of bristle tufts. Toothbrushes having replaceable bristle heads are known, and an object of the present invention is to provide an improved toothbrush with a conveniently replaceable bristle head.

According to the present invention there is provided a toothbrush comprising an elongate shaft and a removable channel-section bristle head having resiliently deformable side walls adapted to fit on to a cooperating end portion of the shaft by snap engagement such that the head extends substantially longitudinally of the shaft, the head and the end portion of the shaft having respective locating elements which, upon fitting of the head to the shaft, interengage to prevent sliding of the head longitudinally of the shaft.

The bristle head can easily be replaced when it becomes worn, thus avoiding the expense of replacing the entire toothbrush. This gives rise to the possibility of providing toothbrushes having expensive shafts of a durable nature made from, for example, metal or carved wood.

The interengageable elements of the bristle head and the toothbrush shaft are preferably offset with respect to the longitudinal axis of symmetry of the head and the shaft, so that the head can be fitted to the shaft only in one orientation.

The bristle head may be snap engageable with the shaft by relative longitudinal sliding movement or by pressing the end portion of the shaft transversely into the channel-section head.

The shaft may in one embodiment of the invention have a hollow handle portion, open at its end opposite the head-receiving end portion, adapted to receive a toothpaste container. For the purpose of retaining the toothpaste container, the handle portion may be curved along its length so that a toothpaste container can be wedge within the hollow interior of the handle portion. Alternatively the hollow handle portion may be straight and adapted to contain a curved toothpaste container with can be wedged within the hollow interior of the handle portion.

The invention is also applicable to toothbrushes of the type having a hollow body portion for containing cleansing fluid such as that described in my U.K. Patent Specification No. 1,244,915.

Some embodiments of the invention will now be more particularly described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of a toothbrush according to a first embodiment of the invention;

Figure 2 is a side elevation, partly cut away, of the toothbrush shown in Figure 1;

Figure 3 is a cross-sectional view on an enlarged scale of the toothbrush, taken on line III—III of Figure 2;

Figures 4 and 5 are side views of part of a toothbrush according to the first embodiment of the invention, illustrating two methods of removal of the bristle head from the brush shaft;

Figure 6 is a longitudinal sectional view of part of a toothbrush according to a second embodiment of the invention; and

Figure 7 is a cross-sectional view, taken on line VII—VII of Figure 6.

In the drawings similar features of the embodiments are referenced by the same numerals.

Referring to the drawings Figures 1 to 3 show an end portion, generally indicated 1, of a shaft 2 of a toothbrush. The shaft 2 is

SEE ERRATA SLIP ATTACHED

hollow and open at its end remote from the end portion 1, to receive a tube of toothpaste 3 (Figure 2) which can be withdrawn from the open end of the shaft 2 for use. The hollow shaft 2 is curved along its length so that the toothpaste tube 3 can be wedged into the interior of the shaft 2 when not in use.

A moulded plastics bristle head 4 is removably engaged with the end portion 1 of the shaft. Tufts of bristles 5 are shown mounted in a usual arrangement for toothbrushes in a base 6 of the bristle head 4, which has a channel section.

The side walls 7 of the bristle head 4, taper in thickness from the base 6 and are surmounted by laterally inwardly projecting lips 8 which cooperate with bevelled shoulders 9 of the shaft end portion 1 to retain the bristle head 4 in position.

The bristle head 4 is made from resiliently deformable plastics material such that it is snap-engageable on to the shaft end portion 1. The end portion 1 is of generally trapezoidal cross section having convergent side faces 10 which serve to force the lips 8 apart when the bristle head 4 is pressed onto the shaft end portion 1, the side walls 7 engaging the side faces 10 when the lips 8 snap engage over the shoulders 9 to retain the head 4 on the shaft.

The base 6 of the channel section bristle head 4 is provided with an integral tapered locating peg 11 which is disposed between the ends of the head 4, and is offset with respect to a longitudinal axis of symmetry of the head. The end portion 1 of the shaft 2 is provided with a cooperating tapered socket 12 in which the locating peg 11 of the head 4 engages when the head is snap-fitted to the shaft, so as to ensure that the head 4 can be fitted to the shaft 1 in only one orientation. This enables bristle heads 4 of different length to be fitted correctly to the shaft.

The two side walls 7 of the channel section head 4 have centrally disposed raised portions 13 which project beyond the side faces 10 of the shaft embraced by the head 4 when the latter is fitted. The raised portions 13 assist in the removal of the head 4 from the shaft end portion 1, either by resting the raised portions 13 on a flat surface, and pressing one end of the head 4 onto this surface while pressing down on the shaft 2 to cause pivotal movement of the shaft relative to the head 4, releasing the latter, as illustrated in Figure 4, or by pressing down on the shaft 2 while the raised portions 13 rest on a flat face, as illustrated in Figure 5.

Figures 6 and 7 show a second embodiment in which the hollow shaft 2 acts as a reservoir for cleansing fluid and has a blind bore 14 extending from the interior of the hollow shaft 2 into the end portion 1. The bore 14 is closable by a tapered portion 15 of a valve rod 16. The rod 16 is displaceable longitudinally by rotation of a cap (not shown) which closes the end of the hollow shaft 2 opposite the end portion 1, as described in my U.K. Patent Specification No. 1,244,915.

A tuft of bristles 17 adjacent one end of the bristle head 4 is mounted in an outlet hole 18 which communicates with the internal blind bore 14. When the bristle head 4 is attached to the shaft 2, as shown, the hole 18 communicates directly with the bore 14.

In use the toothbrush can be filled with cleansing fluid preferably a liquid, through a closable opening (not shown) in the cap which operates the valve rod 16, the opening to the valve bore 14 being closed by the valve rod 16. The rod 16 may then be displaced (to the right as shown in Figure 6) to unseal the opening to the bore 14 and liquid will flow through the hole 18 and on to the associated bristle tuft 17.

Narrow grooves 19 in the bristle-bearing surface of the bristle head assist in spreading the cleansing liquid along the exterior of the bristle head to all the bristles 5 of the head.

After use the bore 14 may be resealed by the rod 16. If required, the bristle head 4 may then be interchanged with another bristle head having the same or a different arrangement of bristles, or a different length, as described earlier.

In this embodiment no locating peg 11 and cooperating socket 12 are provided by the shaft end portion 1 is formed with an end stop 1a to prevent sliding movement of the bristle head 4 relative to the shaft in use. Alternatively, the bristle head 4 and the shaft may have smooth cooperating surfaces, the head 4 being provided with a stop such that on resilient deformation of the bristle head walls the head may be slid onto the shaft to snap the stop into engagement with a cooperating detent in the shaft end portion 1 to attach the head to the shaft.

Toothbrushes according to the invention may have different forms of bristle head, which may be interchanged on the shaft. For example, the bristle head may have only one bristle tuft which may be set at an angle in one end of the bristle head.

WHAT I CLAIM IS:—

1. A toothbrush comprising an elongate shaft and a removable channel-section bristle head having resiliently deformable side walls adapted to fit on to a cooperating end portion of the shaft by snap engagement such that the head extends substantially longitudinally of the shaft, the

head and the end portion of the shaft having respective locating elements which, upon fitting of the head to the shaft, interengage to prevent sliding of the head longitudinally of the shaft.

2. A toothbrush as claimed in Claim 1, in which the interengageable locating elements are offset with respect to a longitudinal axis of symmetry of the head and the shaft.

3. A toothbrush as claimed in Claim 1 or Claim 2, in which the said locating elements comprise a locating peg on the bristle head which upon fitting of the head to the shaft engages in a socket in the end portion of the shaft.

4. A toothbrush as claimed in any one of the preceding claims, in which the resiliently deformable side walls of the bristle head are formed with retaining lips which project inwardly towards each other such that when the head is fitted to the shaft the side walls embrace opposite sides of the shaft end portion and the retaining lips bear against shoulders on opposite sides of the shaft to retain the head in position on the shaft.

5. A toothbrush as claimed in any one of the preceding claims, in which the side walls of the bristle head are formed with raised portions which project beyond the sides of the shaft embraced by the head when the latter is fitted so that pressure exerted on the riased portions towards the base of the channel section can release the head from the shaft.

6. A toothbrush as claimed in Claim 5, in which the raised portions are disposed substantially in the longitudinal centre of each side wall of the bristle head and can form a fulcrum when engaged with a bearing surface to effect pivotal movement of the head relative to the shaft for the purpose of releasing the head.

7. A toothbrush as claimed in any one of the preceding claims, in which the bristle head is made of resilient plastics material.

8. A toothbrush as claimed in any one of the preceding claims, in which the shaft has a hollow handle portion, open at its end opposite the head-receiving end portion, adapted to receive a toothpaste container.

9. A toothbrush as claimed in Claim 8, in which the hollow handle portion is curved along its length so that a toothpaste container can be wedged within the hollow interior of the handle portion.

10. A toothbrush as claimed in Claim 8, in which the hollow handle portion is straight and is adapted to contain a curved toothpaste container which can be wedged within the hollow interior of the handle portion.

11. A toothbrush as claimed in any of Claims 1 to 7, in which the shaft is provided internally with a reservoir for cleansing fluid communicating with an aperture in said shaped end portion of the shaft through a feed duct, and a valve device for selectively opening or closing the feed duct, the base of the channel-section bristle head having one or more outlet holes which communicate with the aperture in the end portion of the shaft when the head is fitted thereto.

12. A toothbrush bristle head having a channel section with resiliently deformable side walls, the head being adapted to fit onto an end portion of a shaft of a toothbrush by snap-engagement therewith such that the head extends substantially longitudinally of the shaft, the head having a locating element engageable with a cooperating element of the end portion of the shaft to prevent sliding of the head longitudinally of the shaft when fitted thereto.

13. A toothbrush, or a bristle head for a toothbrush, substantially as herein described with reference to and as shown in Figures 1 to 5 or Figures 6 and 7 of the accompanying drawings.

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Printed for Her Majesty's Stationery Office, by the Courier Press, Leamington Spa, 1978
Published by The Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.

1537526 COMPLETE SPECIFICATION
3 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheet 1

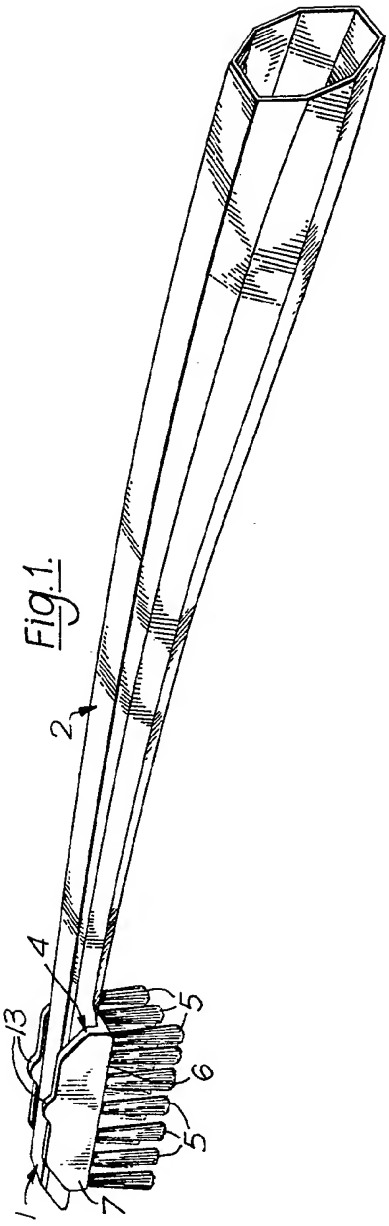


Fig.1.

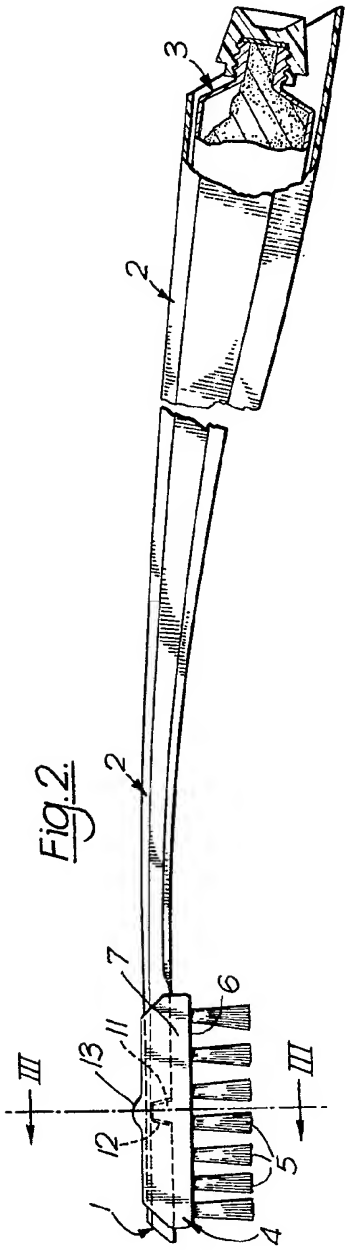


Fig.2.

Fig.3.

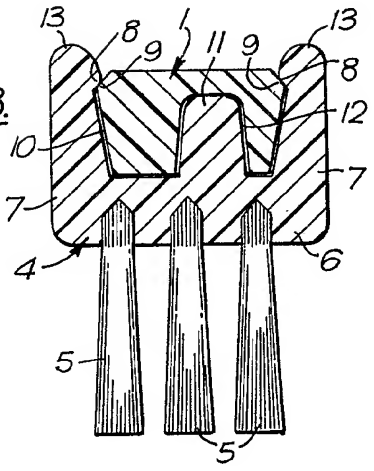


Fig.4.

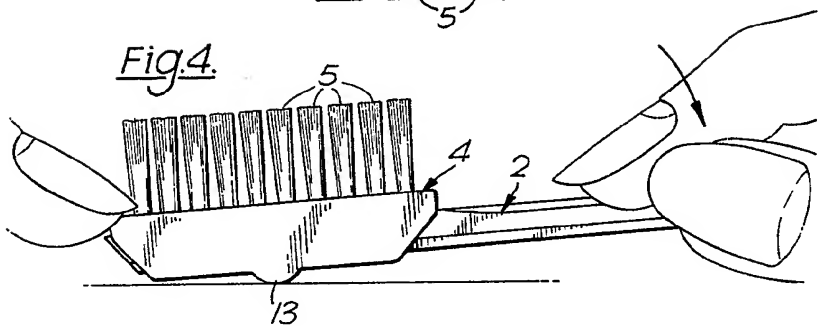
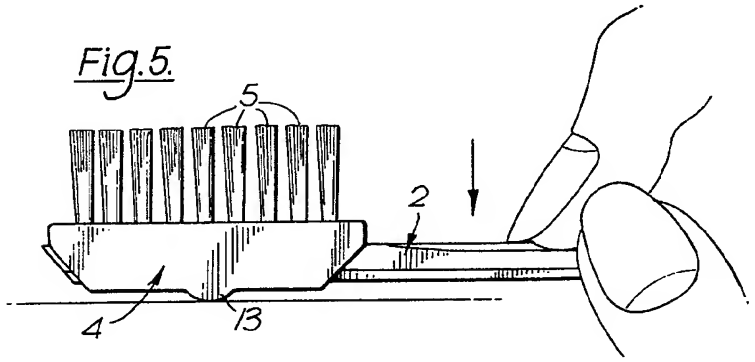


Fig.5.



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3 SHEETS This drawing is a reproduction of the Original on a reduced scale
Sheet 3

Fig.6.

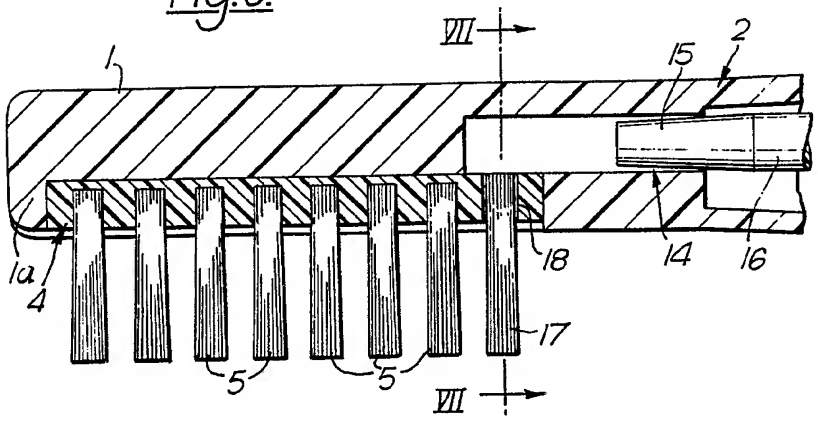

Fig.7.